INSTRUCTIONS FOR LIVE MOISTURE CONTENT SAMPLING DATA SHEET

1. Data Entry

The spreadsheet following these instructions is intended to be used in two ways. Hard copy and data entry into the sheet in excel. An excel version can be downloaded from the same website as this document. The file is named Fuel_Moisture_Sheet.xls. Users will need a hard copy to enter some parts of the data in the field when samples are taken. The excel version will be input in the office during and after oven drying. The excel spreadsheet will do the math for you, however these instructions explain how to do it manually if needed.

The sheet has room to enter 6 samples for 3 different species. It is setup to enter 3 samples of new and 3 samples of old growth for each species. (Deciduous is all new) If you would like to take more samples for each species use the whole sheet for one species and use extra sheets for different species. If you use more than one sheet for the same sampling please enter the page numbers sequentially in the blanks to the upper right.

Enter header information on each sample collection sheet:

- **Agency** code
- **Forest or State** code
- **District or Unit** code
- **Site name or number**.

Enter **Collected Record** header information

- **Date** month/day/year as mm/dd/yy
- **Time** (should be between 1100 and 1600)
- **Person** (your) name

Take a few moments to fill out the **Phenological Stage** section. Mark the appropriate boxes in each of the **Leaf / Stem** and **Flowers / Fruits** columns.

Mark the appropriate **SAMPLE CONTENTS** choice in the box to indicate whether this sample contains foliage only, or is a clipped sample containing both leaves and small diameter stems.

Note anything unusual or of special interest about the site in the **Remarks** box.

Collect your weather observations if that is a part of your previously established sampling program. If weather collection is not a normal part of your sampling routine, just note percent cloud cover.

Enter the can, bag or bottle number as you select each from your pack or box.

If you are collecting only 1 species, note the species in the row under Species heading. If you are sampling more than 3 new and/or 3 old for the one species use the other species sections and enter the same species name under each Species heading. If you are collecting more than one species, note the species in each section. If you are sampling more than 1 species and more than 3 new and/or 3 old samples for the one species, use one sheet for each species and number the sheets sequentially in the blanks to the upper right of the sheet.

Be sure to note the age or condition of each sample you are collecting. They need to be entered in the correct box for each sample as the spreadsheet calculates the math based on which cell the data is entered into. **New** = this year's growth. **Old** = growth from previous year(s). Once current and past years' leaves and/or stems appear the same, **(mix)** just enter the data in the **"old" section and note mix in the can/log # field.**

As you fill each container, double check container number against that entered on the sheet, then seal securely and stow in an insulated cooler or sample box.

When you finish collecting all samples: If you are collecting samples into plastic bags, return to your vehicle and weigh each immediately to the nearest 0.1 gram. Enter this weight in the **(Wet can wt. column)** on your data sheet. Pack the plastic bags carefully into a large plastic bag, seal and store in a cool safe place. If you collect samples in cans or bottles, seal, pack carefully into your box or cooler and place in a secure, shaded location in your vehicle. Return to your office.

2. Oven Drying Procedure

Preheat the drying oven to 80C.

Samples collected in self-sealing bags and weighed in the field can be opened and placed upright in the oven.

Samples collected in cans or bottles must be weighed before drying. Remove any tape or bands from the container. Place container on the center of the scale platform and record the **Gross Wet Weight** to nearest 0.1 gram in the **wet can wt Column**. Check to see that the number on the container matches the number on the lid and the species in the container matches that noted on the data sheet.

Remove lids from containers. Place lid beneath can if it fits and put sample in the drying oven. Place bottle lids in order in a convenient place so you can easily replace the matching lid and place opened bottle in the oven. Space the containers in the oven so air can circulate freely. Record the date and time the samples were put into the oven.

Dry the samples for 24 hours at 80C. Do not put additional samples into the oven while drying a set of samples. If you do, dry the set an additional 24 hours.

Take a few samples from the oven and replace each lid as the container is removed. If using fuel moisture bags, reseal the bag. Do not leave the oven door open. If any

sample material falls from the container, throw the sample away, unless you can replace all of it.

Weigh the sample with its lid on as soon as possible after removing it from the drying oven, and determine the **Gross Dry Weight** to the nearest 0.1 gram. Check the container number and its contents before you record the weight on the data sheet. Enter the weight in the **(dry can wt. Column)**. Replace the lid tightly on the container and save the sample until the fuel moisture content is calculated in case an error requires rechecking the sample contents or weight.

3. Calculating Moisture Content

Enter Tare Weight in the **(tare wt. Column)**. You may have a standard weight to enter if using bags of uniform size. Or enter the weights of the cans or bottles that had been pre-weighed empty from your master tare weight list.

The spreadsheet has the formulas built in and will calculate the rest of the cells for you. **Again, it is important that your data be entered into the correct cells due to this. I.e. The new and old columns, as the final averages are based on the inputs in those rows.**

How this is calculated is as follows:

Water wt column = *Wet can wt*. column - *Dry can wt*. column

Dry plant wt. Column = *Dry can wt*. column - *Tare wt*. column

% Moisture Column = *Water wt* column / *Dry plant wt* column

Average old and *average new* cells = value in *% moisture* cells for the 3 samples of old and new added together and / 3.

If using all of one sheet for one species add the averages and / by 3. Hand enter this number in the cells labeled **Total avg new** and **Total avg old**. If the sample was **Mix** just use, and then hand enter into the cell labeled **Total avg old**.

Live Moisture Sheet

To use as an excel spreadsheet download Live_Moisture_Sheet.xls
You can print this sheet to do the needed field inputs

Agency	Forest	District	Site name or number

Page 1 of ______

	Date	Time	Person
Collected			

CELLS IN GREY ARE TO BE ENTERED BY USER

All weights are in decigrams

Species ______

can/log #	Needle age / Condition new	Needle age / Condition old	wet can wt.	dry can wt.	tare wt.	water wt.	dry plant wt.	% moisture	
		x				0	0	#DIV/0!	
		x				0	0	#DIV/0!	
		x				0	0	#DIV/0!	
	x					0	0	#DIV/0!	
	x					0	0	#DIV/0!	
	x					0	0	#DIV/0!	
								avg old	#DIV/0!
								avg new	#DIV/0!

Species ______

can/log #	Needle age / Condition new	Needle age / Condition old	wet can wt.	dry can wt.	tare wt.	water wt.	dry plant wt.	% moisture	
		x				0	0	#DIV/0!	
		x				0	0	#DIV/0!	
		x				0	0	#DIV/0!	
	x					0	0	#DIV/0!	
	x					0	0	#DIV/0!	
	x					0	0	#DIV/0!	
								avg old	#DIV/0!
								avg new	#DIV/0!

Species ______

can/log #	Needle age / Condition new	Needle age / Condition old	wet can wt.	dry can wt.	tare wt.	water wt.	dry plant wt.	% moisture	
		x				0	0	#DIV/0!	
		x				0	0	#DIV/0!	
		x				0	0	#DIV/0!	
	x					0	0	#DIV/0!	
	x					0	0	#DIV/0!	
	x					0	0	#DIV/0!	
								avg old	#DIV/0!
								avg new	#DIV/0!

* Only used when entire sheet is 1 species

Total avg new	
Total avg old	

Live Plant Phenological Stage
Leaf / Stem Stages

Species			
			Dormant/quiescent
			Buds swelling
			New needle/stem growth
			Needle/stem growth complete
			Oldest needles curing
			Frosted or frozen

Live Plant Phenological Stage
Flowers / Fruits

Species			
			Buds/flowers present
			Seeds/fruits developing
			Seeds/fruits ripe
			Seeds/fruits falling
			None

SAMPLE CONTENTS

Leaf Only	
Leaf & Stem	

Weather

Dry Bulb	
Wet Bulb	
RH	
Cloud Cover	

Comments:	